

# Claims

- [c1] A process for coating a three-dimensional substrate comprising:  
supplying a coating material comprised of 100 percent solids material; and  
applying said coating material to the three-dimensional substrate to provide a uniform thin film coating of said coating material on said three-dimensional substrate.
- [c2] The process of claim 1, wherein said uniform thin film coating has a film thickness of 0.0015 inches or less.
- [c3] The process of claim 1, wherein said uniform thin film coating has a film thickness of 0.001 inches or less.
- [c4] The process of claim 1, wherein said coating material is UV curable.
- [c5] The process of claim 1, wherein said three-dimensional substrate is comprised of wood.
- [c6] The process of claim 1, wherein said three-dimensional substrate is a cabinet component.
- [c7] The process of claim 1, further comprising the step of atomizing said coating material to form an atomization

stream.

- [c8] The process of claim 7, wherein said atomization stream is temperature controlled.
- [c9] The process of claim 8, wherein said atomization stream is controlled to be between about 80 degrees Fahrenheit and about 160 degrees Fahrenheit.
- [c10] The process of claim 8, wherein said atomization stream is controlled to be between about 110 degrees Fahrenheit and about 140 degrees Fahrenheit.
- [c11] The process of claim 1, further comprising atomizing said coating material to form particles having an average primary particle size in the range of about 25 microns to 50 microns.
- [c12] The process of claim 1, wherein the coating material is applied to said substrate to form a wet build and then dried to form a dry build.
- [c13] The process of claim 12 wherein said wet build and said dry build are substantially equal in film thickness.
- [c14] The process of claim 1, wherein said coating material comprises multiple coatings.
- [c15] The process of claim 14, wherein said coating material

comprises a sealer and a topcoat.

[c16] The process of claim 14, wherein said multiple coatings are applied in separate steps.

[c17] The process of claim 1 further comprising the step of sanding or scuffing said substrate.

[c18] The process of claim 1, wherein the coating material is applied to said substrate by a high precision spray gun.

[c19] The process of claim 18, wherein said high precision spray gun is a SATA LP™jet K3™ HVLP Automatic High Performance Spray Gun or a Can-Am #2100 RC Fluid Re-circulation Automatic Spray Gun.

[c20] The process of claim 1, further comprising the step of adding heat to said coating material.

[c21] The process of claim 20, wherein said coating material is heated to between about 80 degrees Fahrenheit and about 160 degrees Fahrenheit.

[c22] The process of claim 20, wherein said coating material is heated to between about 110 degrees Fahrenheit and about 140 degrees Fahrenheit.

[c23] The process of claim 1 further comprising the step of providing a pressurized air stream.

- [c24] The process of claim 23 further comprising the step of heating said pressurized air stream.
- [c25] The process of claim 24, wherein said pressurized air stream is heated to between about 80 degrees Fahrenheit and about 160 degrees Fahrenheit.
- [c26] The process of claim 24, wherein said heat is supplied from an external source.
- [c27] The process of claim 24, wherein the coating material is applied to said substrate by a high precision spray gun and said heat source is a component of said high precision spray gun.
- [c28] The process of claim 1, wherein the coating material is applied to said substrate by a high precision spray gun and further comprising the step of measuring the temperature of a discharge stream from said high precision spray gun.
- [c29] The process of claim 28, wherein said temperature is measured in regular intervals.
- [c30] The process of claim 28, further comprising adjusting the temperature of one or more input streams to said high precision gun to maintain said discharge stream temperature within a predetermined range.

- [c31] The process of claim 30 wherein said predetermined range is between about 80 degrees Fahrenheit and about 160 degrees Fahrenheit.
- [c32] The process of claim 1 further comprising moving said substrate along a conveyor means to move the substrate into and out of a coating application region.
- [c33] The process of claim 32, wherein said coating application region is a spray chamber located within an applicator.
- [c34] The process of claim 1, wherein said coating is applied to said substrate within a coating application region.
- [c35] The process of claim 34, wherein said coating application region is a spray chamber located within an applicator.
- [c36] The process of claim 35 further comprising heating the spray chamber to between about 80 degrees Fahrenheit and about 160 degrees Fahrenheit.
- [c37] The process of claim 1 further comprising heating said substrate to between about 80 degrees Fahrenheit and about 160 degrees Fahrenheit prior to application of said coating.

- [c38] The process of claim 37 wherein said substrate is heated by one or more infrared heaters.
- [c39] The process of claim 1 further comprising atomizing said coating to form coating particles and applying said coating particles to said substrate within a predetermined particle momentum.
- [c40] A process of coating a substrate comprising:  
supplying a coating material comprised of 100 percent solids material;  
atomizing said coating material;  
providing a stream of said atomized coating material and heating said stream of said atomized coating material between about 80 degrees Fahrenheit and about 160 degrees Fahrenheit;  
applying said atomized coating material to a substrate;  
providing a uniform thin film coating of said coating material on said substrate.
- [c41] The process of claim 40 further comprising providing one or more spray guns for dispensing said atomized coating material.
- [c42] The process of claim 41 further comprising providing one or more thermocouples for sensing the temperature of said atomized coating material as it is dispensed from

said one or more spray guns.

[c43] The process of claim 42, wherein heat is added to an input stream to said one or more spray guns in order to maintain said atomized coating material within a predetermined temperature range.

[c44] The process of claim 40, wherein said substrate is three-dimensional.

[c45] The process of claim 40, wherein said substrate is a wooden cabinet component.

[c46] A process for coating a three-dimensional substrate comprising:  
supplying a coating material to one or more spray guns;  
atomizing said coating material;  
applying said atomized coating material to the three-dimensional substrate to form a uniform wet build of coating material; and  
drying said atomized coating on said three-dimensional substrate to form a uniform dry build of coating material,  
wherein said wet build of coating material and said dry build of coating material are substantially equal and each 0.001 inches or less thick.

[c47] The process of claim 46 wherein said coating material is

comprised of 100 percent solids material.

[c48] The process of claim 46 wherein said three-dimensional substrate is a wooden cabinet component.

[c49] A process for coating a three-dimensional component comprising:  
supplying a coating material comprised of one hundred percent solids material to one or more spray guns;  
atomizing said coating material within said one or more spray guns;  
dispensing said atomized coating material from said one or more spray guns and onto the three-dimensional substrate;  
measuring the temperature of said atomized coating material when dispensed at a location proximate to a dispensing point of said one or more spray guns;  
controlling the temperatures of the dispensed atomized coating material such that it is between about 80 degrees Fahrenheit and about 160 degrees Fahrenheit;  
wherein the temperature of one or more input streams to said one or more guns is changed based on the temperature of said atomized coating material that is dispensed.

[c50] The process of claim 49, wherein said three-dimensional substrate is a wooden cabinet component.

[c51] A process for coating a three-dimensional substrate comprising:  
supplying a coating material to one or more spray guns;  
atomizing said coating material;  
applying said atomized coating material to the three-dimensional substrate to form a uniform wet build of coating material; and  
drying said atomized coating on said three-dimensional substrate to form a uniform dry build of coating material,  
wherein said wet build of coating material and said dry build of coating material are each 0.001 inches or less thick.

[c52] A process for coating a three-dimensional substrate comprising:  
supplying a coating material that is substantially solvent-free; and  
applying said coating material to the three-dimensional substrate to provide a uniform thin film coating of said coating material on said three-dimensional substrate.

[c53] A process for coating a three-dimensional substrate comprising:  
supplying a coating material; and  
applying said coating material to the three-dimensional

substrate to provide a uniform thin film coating of said coating material on said three-dimensional substrate; wherein said coating material is substantially recyclable.

[c54] A process for coating a three-dimensional substrate comprising:  
supplying a coating material;  
applying said coating material to the three-dimensional substrate to provide a uniform wet build of said coating material on said three-dimensional substrate;  
drying said coating material on said three-dimensional substrate to form a uniform dry build of coating material wherein said wet build of coating material and said dry build of coating material are each 0.001 inches or less thick.

[c55] The process of claim 54 wherein said wet build of coating material and said dry build of coating material are substantially equal.

[c56] A process for coating a three-dimensional substrate comprising:  
supplying a coating material comprising approximately 25 percent or less solvent; and  
applying said coating material to the three-dimensional substrate to provide a uniform thin film coating of said coating material on said three-dimensional substrate.

